



Parkersburg, West Virginia, Disposal Site

Long-Term Surveillance and Maintenance Program



U.S. Department of Energy
Grand Junction Office

FACT SHEET

The Grand Junction Office has provided cost-effective and efficient stewardship for more than 10 years

Overview

Radioactive zirconium ore was processed at the Parkersburg, West Virginia, Disposal Site under contract to the U.S. Atomic Energy Commission from 1957 to 1968. Other processing activities continued at the site until 1975. These operations resulted in contamination of soil and creation of process-related waste and tailings, a sandlike product containing residues of radioactive materials and other contaminants.

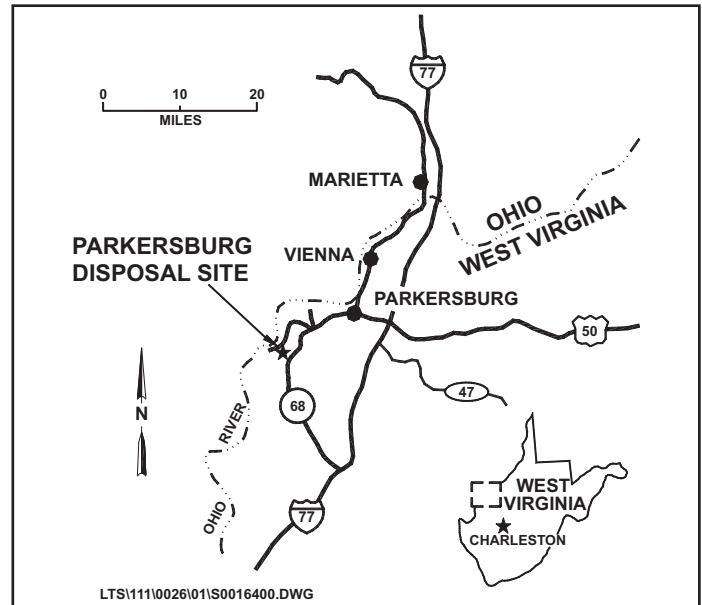
In 1982, the owner, American Metals Climax (AMAX), consolidated the contaminated materials and encapsulated them on site in an engineered disposal cell under the U.S. Nuclear Regulatory Commission Site Decommissioning Management Program. Ownership of the site and the contaminated materials was transferred to the Federal Government in 1994. Responsibility for long-term care and custody was assigned to the Long-Term Surveillance and Maintenance (LTSM) Program at the U.S. Department of Energy (DOE) Grand Junction Office.

In 1988, DOE established the LTSM Program to provide stewardship of disposal cells that contain low-level radioactive material after completion of environmental restoration activities. The mission of the LTSM Program is to ensure that the disposal cells continue to prevent the release of contaminated materials to the environment. These materials will remain potentially hazardous for thousands of years. As long as the disposal cells continue to function as designed, risks to human health and the environment negligible.

The LTSM Program maintains the safety and integrity of disposal cells through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository at the DOE Grand Junction Office for sites in the LTSM Program.

Regulatory Setting

Subtitle D, Section 151(c), of the Nuclear Waste Policy Act of 1982 [42 *United States Code* 101719(c)] contains provisions for transferring privately owned disposal sites to the Federal Government if the site activities were conducted for the benefit of the government. The transfer may ensue once the site owner obtains the concurrence of the U.S. Nuclear Regulatory

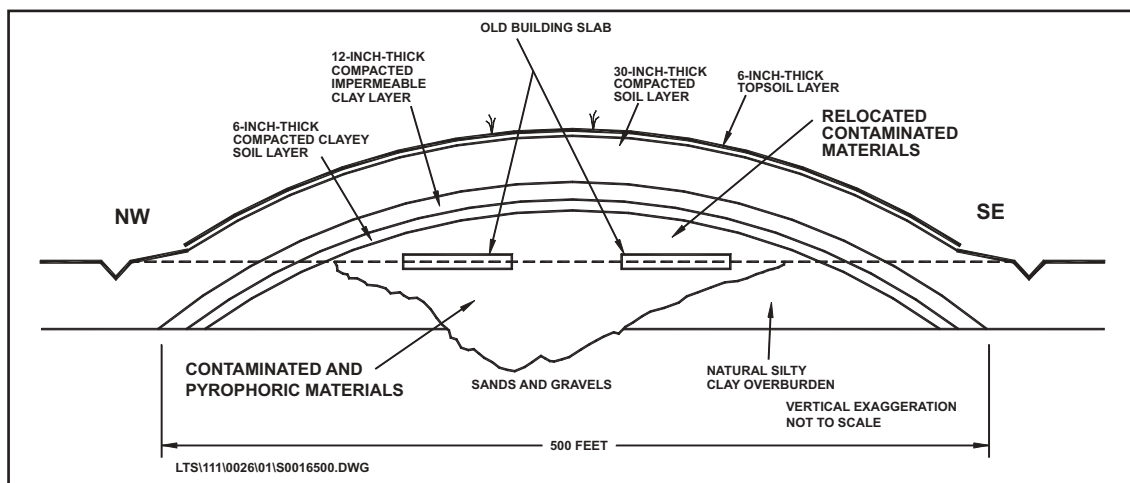


Commission that the site has been remediated to levels sufficient to protect human health and the environment and the site licensee makes a one-time payment to the U.S. Treasury to defray the cost of future site inspections and maintenance. Remediation standards are set forth in Title 10 *Code of Federal Regulations* (CFR) Part 20. Radon emission standards are specified in 40 CFR 61, Subpart Q. Groundwater quality must comply with Safe Drinking Water Act and State of West Virginia standards. Guidance for long-term custody activities is contained in the DOE orders system.

Parkersburg Disposal Site

The Parkersburg Disposal Site is located 8 miles southwest of Parkersburg, West Virginia, in Wood County. The surrounding land is primarily agricultural and industrial with some residential use and is moderately populated. The grass-covered, gently sloping disposal cell occupies an area of about 12 acres on the 15.16-acre site and rises to a maximum height of approximately 9 feet. A posted security fence surrounds the site.

The site is situated on a terrace above the maximum-recorded flood level of the Ohio River. The terrace is composed of fluvial and glacial outwash deposits consisting of as much as 10 feet of clayey silt, which overlies about 90 feet of interbedded sand and gravel alluvium. Bedrock, which exists at a depth of 100 feet,



Northwest-Southeast Cross Section of Parkersburg Disposal Cell

consists of cyclical beds of sandstone, coal, shale, and limestone of the Dunkard Group. Unconfined groundwater is encountered at depths of 50 to 75 feet beneath the site in the unconsolidated materials.

The Carborundum Company developed the Parkersburg site in 1957 to produce zirconium metal for use in the construction of nuclear reactors for the U.S. Navy. Some of the zirconium ore processed at the Parkersburg site was radioactive. The initial process used at the site generated waste material that was pyrophoric (capable of causing fires and explosions). AMAX assumed ownership of the plant by 1967, becoming the U.S. Nuclear Regulatory Commission licensee to process and possess radioactive ores and waste materials at this location. Waste materials were stored in drums that subsequently deteriorated and leaked, resulting in soil contamination. Approximately 3,000 drums of ore, waste, and contaminated soil were disposed of off site in 1968.

During building construction activities in 1978, buried pyrophoric material was encountered in an excavation. AMAX conducted technical studies and obtained the approval of the U.S. Nuclear Regulatory Commission to consolidate the contaminated materials on site in an engineered disposal cell. The remainder of the site was cleaned up and released for unrestricted use. Remedial action was completed by AMAX in November 1982. Site title was transferred to the Federal Government in March 1994, and the U.S. Nuclear Regulatory Commission terminated the AMAX license in June 1994.

Cell Design

The relocated contaminated materials were placed on concrete building slabs located over the buried pyrophoric waste and covered with a cap. The cap was designed to minimize radionuclide leaching, reduce radon emissions, prevent erosion and dispersion of the contaminated materials, and eliminate the potential for contact with pyrophoric wastes. A layer of compacted clayey soil was placed over the waste, followed by a

layer of low-permeability clay. A layer of compacted topsoil was placed over the clay cap to protect it from weathering and erosion, upon which was placed a layer of uncompacted topsoil to support the grass cover. A clay-filled barrier trench was constructed around the perimeter of the stabilization mound to protect it from horizontal movement of off-site shallow groundwater, and a shallow drainage furrow was constructed to channel water away from the mound.

LTSM Program Activities

The LTSM Program manages the site according to a long-term surveillance plan (LTSP) prepared specifically for the Parkersburg site. Under provisions of the LTSP, the LTSM Program (1) conducts annual inspections of this site to evaluate the condition of surface features, (2) cuts the grass at least once each year and controls other vegetation, (3) performs other maintenance as necessary, and (4) continues to monitor groundwater.

Site characterization by DOE in 1994 showed that groundwater beneath the site was uncontaminated. As a best management practice, DOE monitors groundwater at 5-year intervals. Monitoring in 1998 revealed no contaminants above background levels.

Although this site is no longer under U.S. Nuclear Regulatory Commission license, DOE's responsibility for the safety and integrity of the Parkersburg site will continue indefinitely.

Contacts

For more information about the LTSM Program or the Parkersburg Disposal Site, contact

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<http://www.gjo.doe.gov/programs/ltsm>